

## **ARBOREAL ADVENTURES: TAKING STUDENTS TO NEW HEIGHTS WITH TREE CLIMBING, ARBORICULTURE, AND URBAN FORESTRY**

### **Overview and Objective**

In the College of Forest Resources, Introduction to Urban and Community Forestry (FO 4683, NREC 4683, FO 6683) is a course taken by Forestry majors in the Urban Forestry Concentration, but has become an increasingly popular professional elective for students in other Forestry concentrations, as well as Natural Resources and Environmental Conservation (NREC), Wildlife, Fisheries, and Aquaculture (WFA), and Sustainable Bioproducts (SBP) majors (5+ students per year). Dendrology (FO 2113) is a course that all undergraduate Natural Resources and Environmental Conservation (NREC) and Forestry majors (40+ students per year) within the Department of Forestry are required to take in their sophomore year. The course is also a popular elective for many undergraduate students in the WFA (60+ students per year) and SBP (~5 students per year) programs. Due to the high demand for the course, Dendrology is taught every fall and spring semester. The Forestry Summer Field Program is comprised of four courses taught over ten weeks each summer, and is required of all Forestry majors (40+ students).

The primary goal of Introduction to Urban and Community Forestry is to introduce students to urban forest management issues and opportunities, including study of social ecological systems, urban governance systems, sustainable forest management, tree biology and health, arboriculture, urban forest inventory and analysis, and urban planning. Though Introduction to Urban and Community Forestry is more specialized, the course content is relevant to all students, as it pertains to managing the vegetation around where humans work, live, and play. Even if students do not intend to become urban foresters, they learn skills that will help them maintain trees around their homes and neighborhoods to improve heating and cooling costs, mental health, and aesthetics with functionality, as well as identify trees that might be at risk to increase safety in their communities. In Dendrology, students learn woody plant (i.e., trees, shrubs, and vines) identification and taxonomy, plant anatomy, their common ecological and economical importance, and the site conditions in which they are typically found. Experience identifying woody plant species is a critical skill needed by all College of Forest Resources students and is essential for their success as they advance in their academic and professional careers. The Forestry Summer Field Program courses focus on forest communities, forest description and analysis, forest operations and harvesting, and wildlife and fisheries practices, and provide essential field, lab, and analysis skills for all students intending to graduate a pursue a career in forestry.

Given the importance of urban forestry, we would like to incorporate more active learning practices that demonstrate best management practices for urban foresters. It is challenging to effectively demonstrate safety and technique through classroom lectures and PowerPoints, so having the equipment to take students into the field and learn through hands-on experience would revolutionize the way we are able to teach students how to manage trees in urban areas, where assessing and maintaining the health of trees is paramount to ensure no loss of life or property. The primary objective of this project is to enhance accessibility, exposure, and student learning experiences in Introduction to Urban and Community Forestry, Dendrology, and the Forestry Summer Field Program. To meet this objective, we propose to purchase climbing gear and a pole pruner (Figure 1) so students can learn how to safely and effectively climb trees to assess health and maintain trees using pruning and maintenance best management practices. Students will be assessed on their ability to identify safe climbing practices and best management practices for pruning and tree maintenance. In total, we aim to introduce urban forestry and arboriculture techniques to improve the learning outcomes of 50+ students each fall, spring, and summer semester, on average, within the College of Forest Resources.



**Figure 1.** Example of a Notch pruner and saw quick change set (LEFT) and Notch sentinel harness with other climbing gear (e.g., carabiners, ropes, ascender) (RIGHT).

### **Rationale for Requested Funds**

The Department of Forestry maintains some other tree pruning tools (e.g., pole saw, hand pruners, hand saws), but lacks climbing equipment and a pole pruner. A pole pruner, as opposed to a pole saw, allows for more precise and clean removal of tree branches for inspection of leaves and damage, or to generally trim a tree to improve its health. Purchase of climbing gear and a pole pruner would supplement the College of Forest Resources field-based and lecture-based courses and increase the amount of exposure students get to best management practices and safety when conducting work in urban forestry. This enhanced success will benefit the department and college by promoting student retention and increasing student success post-graduation.

### **Materials and Implementation Plan**

The materials needed for this project include climbing gear for two individuals (one instructor and one student), safety glasses for observers (10 pairs), and a pole pruner to collect leaf material for study. Purchase of materials will begin immediately upon funding. Climbing activities will be incorporated into the Introduction to Urban and Community Forestry and Forestry Summer Field Program curriculum. Students will have the opportunity to climb with an instructor, but it will not be a mandatory assignment. If a student does not want to actively climb, they will, at minimum, learn about all of the tools that come together to form safe climbing gear and get to observe the instructor and/or their peers climbing. The primary goal of this hands-on exercise is to familiarize students with safe climbing practices that they may need to utilize in their careers as natural resource professionals. Additionally, students will get to use the pole pruner on the ground, in addition to other tree pruning tools (e.g., pole saw, hand pruners, hand saws) that we already have, to learn how to safely and effectively trim trees based on pruning best management practices set by the International Society of Arboriculture (ISA). The pole pruner will also be utilized for Dendrology to help students collect leaves from higher in the canopy to compare shade and sun leaves, and contribute to their plant collections. The purchase of the climbing gear and pole pruner and the described adoption of climbing and pruning best management practices into active learning opportunities in Introduction to Urban and Community Forestry, Dendrology, Forestry Summer Field Program, and other College of Forest Resources courses aligns with the Otilie Schillig Special Teaching Projects grant program goal for improving undergraduate teaching.

**Budget**

Funds in the amount of \$2,998.58 are requested for this project from the Otilie Schillig Special Teaching Project Grant (Table 1). The Department of Forestry will provide cost share in the amount of \$486.43, for a total project cost of \$3,485.01. The Department Head of the Department of Forestry, Dr. Donald Grebner, has signed the cover page indicating approval of the match. Please see the budget table below.

**Table 1.** Itemized cost for the climbing gear for two individuals (instructor + student).

<b>Funding Source</b>	<b>Item</b>	<b>Quantity</b>	<b>Unit Cost (\$)</b>	<b>Total Cost (\$)</b>
	Black Sentinel Harness	2	\$379.99	\$759.98
	Blue Moon 11.7mm Climbing Rope	2	\$198.99	\$397.98
	Vertex Vent ANSI Helmet	2	\$99.99	\$199.98
	Climbing Technology Foot Ascender	2	\$74.95	\$149.90
	Velox Haas Knee Ascender	2	\$193.65	\$387.30
	OK Autolock Carabiner	8	\$20.95	\$167.60
Otilie Schillig Special Teaching Project Grant	9.3mm EpiCord Sewn Eye & Eye	4	\$27.95	\$111.80
	16' Replacement Lanyard Blue Moon	2	\$38.12	\$76.24
	Pinto Pulley	2	\$54.95	\$109.90
	14 oz Standard Throw Bag	2	\$14.99	\$29.98
	8 oz Standard Throw Bag	2	\$14.99	\$29.98
	Folding Throw Line Cube	2	\$43.99	\$87.98
	Adjustable Friction Saver	2	\$72.99	\$145.98
	Rope Wrench	2	\$171.99	\$343.98
<b>Schillig Grant Subtotal</b>				<b>\$2,998.58</b>
	Octavia Pulley	2	\$64.99	\$129.98
MS State, Department of Forestry Cost Share	180 ft Throw Line	2	\$26.99	\$53.98
	Notch Pruner	1	\$199.99	\$199.99
	Gloves	2	\$34.99	\$69.98
	Anti-fog safety glasses	10	\$3.25	\$32.50
<b>Cost Share Subtotal</b>				<b>\$486.43</b>
<b>Total Project Cost</b>				<b>\$3,485.01</b>

**About the Proposers**

Dr. Ashley N. Schulz is an Assistant Professor in the Department of Forestry. She teaches Introduction to Urban and Community Forestry (FO 4683, NREC 4683, FO 6683), Silviculture for Forest Health and Protection (FO 8990), and the fall Dendrology (FO 2113) course. She is also an ISA Certified Arborist.

Dr. Joshua J. Granger is an Assistant Professor in the Department of Forestry. He teaches Forest Measurements (FO 2213), Forest Description and Analysis (FO 3015), Taxonomy of Rare and Unusual Woody Species in the Southern U.S. (FO 8990), and the spring Dendrology (FO 2113) course. He is also an ISA Certified Arborist.